REMARKS/ARGUMENTS

Claims 1-22 are pending. Applicants note that the references provided by the Examiner are difficult to read, because the highlighting used by the Examiner has resulted in a copy of the references in which the cited sections and figures are practically illegible. In the future, underlining or markings in the margin are respectfully requested, so that the cited sections can be read without having to obtain new copies of the cited references.

35 USC §102 Rejections

Claims 1-8, 11-13, and 19-20 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent Number 6,397,044 B1, granted to Nash et al. (hereinafter "*Nash*"). These rejections are respectfully traversed.

Nash fails to provide a basis for rejection of claims 1-8, 11-13, and 19-20 under 35 U.S.C. § 102, because it fails to disclose each element of the claimed invention. For example, claim 1 includes "a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct-conversion receiver further comprising one or more subharmonic local oscillator mixers; a local oscillator coupled to the direct conversion receiver, the local oscillator generating a signal having a frequency equal to a subharmonic of the carrier frequency signal; and a transmitter coupled to the local oscillator, wherein the local oscillator is the transmitter oscillator." It is alleged that *Nash* discloses a transmitter 30 coupled to the local oscillator 22, but in fact, *Nash* discloses that a transmitter "Voltage Control Oscillator (VCO) (31) is on-channel, and the transmitter VCO tracks the receiver local oscillator (22) by a phase locked loop incorporating a down conversion mixer (32)." Thus, *Nash* fails to enable the invention of claim 1, as it requires a transmitter oscillator that is separate from the receiver oscillator and that is on-channel, unlike the invention of claim 1 that utilizes a transmitter directly coupled to the local oscillator. As noted in the summary of the invention, "a system and method for a direct conversion receiver and transmitter are provided that allow the local oscillator for a direct conversion receiver to also be used for an associated transmitter, thus reducing the number of components required to receive and transmit data." The transceiver disclosed by *Nash* would not

function without the transmitter VCO 31, and that VCO 31 must be omitted in order for *Nash* to anticipate claim 1. Put another way, the construction of the claim adopted by the Examiner is improper, because *Nash* would not infringe claim 1 as properly construed.

In fact, *Nash* teaches away from the invention of claim 1. As stated in *Nash* at col. 2, lines 30-37, in "conventional direct conversion transceivers the requirement for the transmitter to run from the same local oscillator as the receiver is met because the local oscillator is on-channel, i.e., it runs at the carrier frequency. However, in a direct conversion receiver using a local oscillator at a subharmonic of the reference frequency, ***it is no longer possible to directly use the local oscillator in the transmitter design***." (Emphasis added).

The same arguments apply for the method of claim 11, which includes "receiving a carrier signal modulated with a data signal; mixing the carrier signal with a subharmonic local oscillator signal to extract a baseband signal; modulating an outgoing data signal with the subharmonic local oscillator signal." *Nash* discloses that the receiver oscillator 22 is coupled to the transmitter oscillator 31 through a phase locked loop so that the transmitter can track the receiver, such as for signal timing and synchronization purposes. However, it is clear that the receiver oscillator 22 of *Nash* is not being used to modulate the outgoing data signal. Thus, *Nash* fails to provide a prima facie basis for the rejection of claim 11 under 35 U.S.C. 102. *Nash* also explicitly teaches away from excluding the transmitter oscillator 31, as previously discussed.

Likewise, claim 20 includes "a low noise amplifier receiving a modulated incoming carrier signal having a carrier signal frequency; a local oscillator generating a signal having a subharmonic frequency of the carrier signal; a first mixer coupled to the low noise amplifier and the local oscillator, the first mixer receiving the modulated incoming carrier signal and generating an in-phase incoming data signal; a second mixer coupled to the low noise amplifier and the local oscillator, the second mixer receiving the modulated incoming carrier signal and generating a quadrature phase incoming data signal; a modulator coupled to the local oscillator, the modulator receiving an outgoing data signal and modulating the outgoing data signal onto the local oscillator signal to generate an outgoing modulated carrier signal; and a transmit amplifier coupled to the

modulator, the transmit amplifier amplifying the outgoing modulated carrier signal to a transmission power level." The rejection of claim 20 under 35 U.S.C. 102 is improper, because *Nash* would not infringe claim 20 as properly construed due to the fact that *Nash* includes a receiver oscillator 22 and a transmitter oscillator 31. In order for *Nash* to infringe claim 20, the local oscillator of claim 20 would have to be construed to cover both the receiver oscillator 22 and the transmitter oscillator 31, which is improper. Furthermore, excluding the transmitter oscillator 31 of *Nash* from the system of *Nash* would render the system non-functional, such that *Nash* fails to provide a prima facie basis for the rejection of claims 1, 11, or 20 under 35 U.S.C. 103. *Nash* also explicitly teaches away from excluding the transmitter oscillator 31, as previously discussed.

Claims 2 through 8 depend from claim 1, and claims 12, 13, and 19 depend from claim 11, and are allowable at least for the reasons that they depend from allowable base claims and add additional limitations not found in the prior art. Withdrawal of the rejection of claims 1-8, 11-13, and 19-20 and allowance of these claims is respectfully requested.

35 USC §103 Rejections

Claims 10, 14-15, and 21-22 were rejected as being unpatentable under 35 U.S.C. 103(a) in view of *Nash*. Claims 9 and 16-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Nash* in view of U.S. Patent Number 5,152,005 granted to Bickley (hereinafter "*Bickley*"). These rejections are respectfully traversed.

As previously discussed, *Nash* fails to provide a prima facie basis for the rejection of claims 10, 14-15, and 21-22 for the reasons that removing the transmitter oscillator 31 of *Nash* would render *Nash* non-operable, and that the claims, properly construed, require the local oscillator to be used both for receiving and transmitting. Furthermore, in regards to the combination of *Nash* and *Bickley*, there would be no motivation for the combination because *Nash* does not require "a switch coupled between the local oscillator and the phase locked loop, wherein the switch can couple the phase locked loop to the local oscillator during a transmit cycle and can decouple the phase locked loop from the local oscillator during a receive cycle," as it uses a separate receiver oscillator 22 and transmitter oscillator 31, which transmit and receive at different

frequencies. See, e.g. *Nash* at col. 2, lines 27-29 ("In GSM the duplex spacing is 45 MHz in 900 MHz band and 75 MHz in 1.8 GHz band.") Likewise, *Bickley* teaches away from the combination, as *Bickley* discloses at column 4, lines 25-29, that "synthesizer 20 operates in either a ***modulated*** transmit mode or an ***unmodulated*** receive mode," where PLL 250 is used in the modulated transmit mode but not in the unmodulated receive mode. Thus, there would be no motivation for combining *Nash*, which uses modulated transmit and receive modes, with *Bickley*, which uses a modulated transmit mode and an unmodulated receive mode.

Claim 16 includes "frequency modulating the subharmonic local oscillator signal during a transmit cycle; and interrupting frequency modulation of the subharmonic local oscillator signal during a receive cycle," and claim 17 includes "opening a phase locked loop during the transmit cycle to lock the subharmonic local oscillator signal." Again, a single subharmonic oscillator is used to modulate the receive and transmit cycle, and the phase locked loop is being switched to frequency modulate the local oscillator during the transmit cycle. In addition to the fact that *Nash* and *Bickley* each teach away from the combination, the combination fails to disclose each element of the invention of claims 16 through 18 (as well as the elements of the claims that they depend from), and therefore fails to provide a prima facie basis for the rejection of the claims.

Withdrawal of the rejection of claims 10, 14-15, and 21-22 under 35 U.S.C. 103(a) in view of *Nash*, and of claims 9 and 16-18 over Nash in view of *Bickley* and allowance of these claims is respectfully requested.

CONCLUSION

In view of the foregoing remarks and for various other reasons readily apparent, Applicant submits that all of the claims now present are allowable, and withdrawal of the rejections and a Notice of Allowance are courteously solicited.

If any impediment to the allowance of the claims remains after consideration of this amendment, a telephone interview with the undersigned at (214) 969-4669 is hereby requested so that such impediments may be resolved as expeditiously as possible.

No additional fee is believed to be due. If any applicable fee or refund has been overlooked, the Commissioner is hereby authorized to charge any fee or credit any refund to the deposit account of Akin, Gump, Strauss, Hauer & Feld, L.L.P., No. 01-0657.

Respectfully Submitted,

Christopher J. Rourk
Reg. No.39,348
ATTORNEY FOR APPLICANT

Date: 8/7/03

Akin, Gump, Strauss, Hauer & Feld, L.L.P.
P.O. Box 688
Dallas, TX 75313-0688
Tel. No.: (214) 969-2800
Fax No.: (214) 969-4343